

Epitomes

Important Advances in Clinical Medicine

Preventive Medicine and Public Health

The Scientific Board of the California Medical Association presents the following inventory of items of progress in preventive medicine and public health. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome, and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, researchers, or scholars to stay abreast of these items of progress in preventive medicine and public health that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Preventive Medicine and Public Health of the California Medical Association, and the summaries were prepared under its direction.

Reprint requests to Division of Scientific and Educational Activities,
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Using Health Risk Appraisal in Clinical Practice

A HEALTH RISK APPRAISAL (HRA) is an educational and health promotion tool used to assess health-related behaviors and their effect on mortality risk. Risk factors measured are those that can be modified—smoking, diet, and seat-belt use—and those that cannot—family history, race, and sex. Data are used to estimate a person's risk group (risk cohort), which is based on epidemiologic and actuarial data, and also a person's achievable risk, based on the estimated decrease in risk if positive behavior changes were made. In addition, the relative weight of each of the variables is reported.

Factors to be considered in choosing a health risk appraisal program include the method of administration, the scientific documentation supporting the program, the cost of obtaining and entering the data, and the staff available. Self-administered programs, done directly on the computer or through the mail, use HRAs that are calculated on self-reporting alone. By contrast, there are programs using extensive clinical evaluations, which may include electrocardiograms and physical examinations and require skilled staff to administer. Intermediate types of programs require measuring only height, weight, blood pressure, cholesterol levels, and self-reporting. These intermediate programs are well suited to outpatients. Examples include the Healthier People HRA program developed by the Carter Center at Emory University School of Medicine, Atlanta, Georgia, and the Centers for Disease Control HRA program.

Health risk assessment is useful in determining the health status of people in the workplace, clinic, schools, health fairs, and voluntary and government agencies. The ability of a program to change behavior is influenced by the way the results are given. Program results may be self-interpreted or given by a physician or counselor. One benefit of providing personal counseling is to emphasize the limitations of health risk assessment; clients should understand that HRA does not replace a physical examination and cannot be used in persons with symptoms. Counseling provides an opportunity

to explain the results and to refer the client to health promotion programs or health professionals. All of these approaches lead to improved compliance with recommended behavior changes. In multicultural populations, individual counseling provides an opportunity for linguistic and cultural interpretation.

In the outpatient clinical setting, health risk appraisals can motivate patients to modify behavior detrimental to their health and can identify the need for intervention. Program selection should be based on the needs of the patient population and the scientific basis of the program. Information on different programs can be obtained from the Society for Prospective Medicine, PO Box 55110, Indianapolis, IN 46205-0110.

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Lead Exposure

RECENT WORK has documented an association between blood lead levels in children as low as 10 μg per dl (0.5 μmol per liter) and slight but statistically significant decreases in IQ. A recent meta-analysis confirmed this association. There is a dose-response relationship with a slight but progressive decrease in IQ with increasing lead levels, as well as a "recovery" phenomenon if levels fall below 10 μg per dl (0.5 μmol per liter). This association has been found in the United States and Australia.

There may be no "safe" level of lead in the blood. The level thought to be toxic (25 μg per dl or 1.2 μmol per liter) has recently been lowered by the Centers for Disease Control to 10 μg per dl (0.5 μmol per liter). The environmental fac-

tors that place a person at risk for a single exposure generally remain a long-term threat, particularly in the areas where there are the fewest resources to remove them. For these reasons, children living below the poverty level, the uneducated, and certain races may be more likely to have exposure to a substance that will retard their development and are less likely to have the means or the political clout to correct the problem. Conversely, all groups may be at risk, as young middle-class families renovate their "new" old homes peeling with lead-based paint, use lead-containing folk remedies, and drink from lead-glazed pottery or leaded crystal.

The ubiquitous presence of lead contamination and the profound economic ramifications of identification and removal threaten to make this issue a political battle as well as a medical one. It can also be an emotional issue—an outcry of anger and protest from "classic car" owners over legislation to ban the manufacture of leaded gasoline is symbolic of the problems of reducing the risk of exposure. While such legislation has eliminated the risk associated with the use of leaded gasoline, owners of older cars believe that the costs of lost engine efficiency, increased valve wear, and fuel requiring expensive additives are not worth the theoretic benefit to the rest of society.

Infant cord blood lead levels (implying prenatal exposure) are well correlated with deficits in visual-spatial and visual-motor integration skills at the age of 24 months. A level of "recovery" occurs with many children after 24 months that is not directly related to the initial level but, rather, with factors such as social class, maternal IQ, and with subsequent measured levels of lead. This suggests that children raised in adverse environments will show a deficit at blood levels lower than those seen to affect children of a more advantaged social class.

What are the sources of lead that make this such a pervasive problem? Exposure has been shown to occur through leaded gasoline fumes, proximity to smelter plants, ingestion of lead-containing paints, drinking water that has passed through pipes welded with lead-containing compounds, and hobbies that involve the melting of lead to make fishing weights, model figures, and stained glass. A recent study reported that lead in labels printed on soft plastic bread wrappers could leach into food if the bags were inverted before reuse.

The issue of treatment is unclear. The easily recognized "toxic" levels of lead in the blood—more than 60 μg per dl or 2.9 μmol per liter—may be cleared through a variety of means. Penicillamine and ethylenediaminetetraacetic acid (EDTA) are the traditional agents; both are moderately effective yet have risks of their own. An orphan drug, 2,3-dimercaptosuccinic acid, is apparently more effective and better tolerated as a chelating agent. Treating long-term, low-level lead exposure is not nearly as simple in that the only effective management is prevention and modification of the environment. Without satisfactory methods of treatment available, one must question the appropriateness of wholesale screening of persons at low risk.

A recent study demonstrated the feasibility of screening children using blood lead levels in a suburban family practice. It was found that 20% of children had levels between 10 and 25 μg per dl (0.5 to 1.2 μmol per liter), a percentage

similar to that reported in a number of other studies. No child in this relatively small sample had levels higher than 25 μg per dl (1.2 μmol per liter), however. Because no treatment is available other than removing the source of exposure when it can be identified, physicians are faced with an overwhelming task. This suggests that continued physician-supported legislative and educational efforts to decrease environmental lead levels are more appropriate.

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Anticipating the Arrival of Cholera From Latin America

CHOLERA RAISES legitimate fear wherever it has spread because it can cause large, explosive epidemics and lead to death from hypovolemic shock in 12 to 24 hours. The present, seventh pandemic of cholera—caused by toxigenic *Vibrio cholerae* O, biotype El Tor—began in Indonesia in 1961 and spread first to other areas of Asia, the Middle East, and Africa. In late January 1991, it appeared almost simultaneously in five Peruvian coastal cities between Lima and the northern border with Ecuador and, in succession, invaded Ecuador, Colombia, Brazil, Chile, Mexico, Guatemala, Bolivia, El Salvador, and Panama. It has progressed as far north in Mexico as the state of Sonora, just over the border from Arizona.

As of December 1991, more than 360,000 cases had been officially reported from the Americas, at least 158,000 patients had been admitted to hospital, and more than 3,800 had died. In contrast, between 40,000 and 50,000 cases of cholera have been reported annually throughout the world in recent years. Peru alone reported more than 390,000 cases in 1991.

Travelers to South America have already imported cholera to the United States. One had traveled to Peru and four others to Ecuador. In addition to these isolated cases, two small clusters of eight cases in New Jersey and three cases in New York City occurred after travelers brought home cooked crab from Ecuador and shared it with family and friends. There were no secondary cases. Although there have been 41 importations of cholera to the United States from endemic areas of the world between 1961 and 1990, there has not been a single secondary case.

Epidemiologic investigations in different locales in Latin America have identified a number of risk factors such as unchlorinated municipal water supplies, ice made from such water, dipping hands into home water storage vessels intended for drinking, ingesting ceviche (raw marinated seafood), and eating cabbage fertilized with raw sewage.

Cholera has been thought to be spread primarily, if not entirely, by contaminated water. During the past 20 years, however, investigations have shown that foods can be impor-